

# The Neuroscience of Effective Training

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It's not you, it's them. Or it could be you.

Training is human-to-human transmission of information. Even online training typically has a human guide. This is why measuring training effectiveness is so difficult: Training happens between humans. Was the trainer a poor presenter? How much did learners participate? Did the afternoon session fail because of jet-lag?

In 2018, U.S. businesses provided \$88 billion of training for their employees (<https://trainingmag.com/trgmag-article/2018-training-industry-report/>). How do companies evaluate the return from this investment? Most commonly, learners are asked to complete a survey that asks how much they “liked” the training, the trainers, the food, and the hotel. These measure the meeting rather than the message.

What learning architects really want to know is how much of the presented material stuck in learners' brains.

## Generating Emotional Resonance

Dr. Eric Kandel was awarded the 2000 Nobel prize in Physiology or Medicine for identifying how the brain forms long-term memories. He showed that facts such as your phone number, address, and Social Security Number are remembered for decades because their constant use strengthens connections between neurons.

Emotional memories supercharge this effect. Emotions tag experiences as valuable and are stored in the brain without the need for repetition. Think of a new experience as a soccer ball sitting inside your brain. The brain is wet, so the soccer ball is slippery and hard to pick up. Emotions are like spikes sticking out of the soccer ball with grippy handles. Even when wet, the handles make the soccer ball easy to grasp. The larger the emotional spikes on the soccer ball, the easier it is to pull memories from your brain.

Training that gets people to care about the presented information puts in emotional spikes. Research from my academic laboratory measured the recall of information by giving people a chance to act on what they had learned. We used the mantra: Don't tell me what you think you learned; do something with it.

Our studies showed that an experience provokes action when two networks activate in the brain. First, one must pay attention to the experience. "Pay" is the right word. Attention is metabolically costly, and the brain is stingy with its resources. Second, the content has to generate emotional resonance in the person experiencing it. In other words, you have to care about the experience. Experiences, including training, that produce emotional resonance motivate immediate actions and boost the recall of information even weeks later.

I call the state in which one is attentive to an experience and it generates emotional resonance "immersion." Immersion is why we cry at a movie even though we know the story is fictional and the characters are professional actors. Immersion is why a great teacher can change a student's academic path and a great trainer can change an employee's career path.

The best way to prove that training creates value is to measure how effectively information gets into the brain. My company, Immersion, took my lab's research findings and created a software platform that lets anyone measure the neurologic impact of experiences. Rather than use bulky and expensive brain imaging machines, we work with small sensors worn on the forearm and wrote algorithms that infer what the brain is doing. It took us 20 years of basic science to trace out these pathways (Zak, P. J., & Barraza, J. A. (2018). Measuring Immersion in Experiences with Biosensors - Preparation for International Joint Conference on Biomedical Engineering Systems and Technologies. Proceedings of the 11th International Joint Conference on Biomedical Engineering Systems and Technologies. doi:10.5220/0006758203030307). This allows our clients to measure immersion for 1 to 1,000 people simultaneously. Then we added some clever cloud computing, so immersion can be seen in real time.

Clients use the Immersion platform to measure and improve corporate training, as well as K-12 education. Across multiple client projects, my team has found a powerful positive 0.60 correlation between immersion and recall of information. In other words, when training immerses learners, it gets into the brain and stays accessible. Measuring what matters is the first step to proving that training provides value to organizations. Measurement is also how training is improved and customized for each learner.

## **How to Create Immersive Training**

**1. Tell a story.** Information presented at human scale using a narrative arc effectively builds immersion. Sure, graphs show a lot of information quickly, but stories about the struggles of an employee or customer stick in memory because they are inherently emotional, driving up immersion.

**2. Escape the tyranny of the 60-minute clock.** Create immersive learning modules that break training into 20 minute intervals that include presentation of the material, an opportunity to practice what one has learned, and a recap by learners of what was learned.

**3. Schedule breaks.** Trainers need to know when immersion lags. For example, Immersion client Accenture eliminated the seemingly mandatory introductions on day one; they discovered that only person immersed during the intro was the person giving it. Immersion's clients also have found that "working lunches" not only reduce immersion during lunchtime presentations but also drag down during post-lunch immersion. Immersive training is like working out: Challenge the brain, then give it time to relax and recover. Then challenge again.

**4. Identify Immersion Champions.** Participatory learning sticks in the brain because one has had to apply the information immediately after learning it. Borrow a maxim from medical school, "See one, do one, teach one." Identify learners who can explain how they accomplished the task to facilitate peer-to-peer knowledge transfer. The Immersion platform ranks learners by neurologic responses to identify Immersion Champions immediately after a session has concluded. A technology-free approach is to ask for volunteers (though introverts are less likely to contribute).

**5. Follow up the next day.** The brain consolidates information during sleep. Recall is improved when information is accessed the day after training. Follow up training by giving learners a task to do using their new knowledge. It is easy to do this online. Be sure to give learners feedback on their answers and a chance to fix their mistakes so the correct information is reinforced.

Advances in neuroscience—including scalable, real-time measurement of neural responses—prove the value of training and improve its transmission to learners. It is time to stop guessing and start driving up the ROI from the content you create. When your content matters, it needs to be immersive.

*Paul J. Zak, Ph.D., is founder and chief immersion officer of Immersion Neuroscience, a software-as-a-service (SaaS) platform that measures attention and the unconscious emotional response we all have to compelling content, and predicts future actions with 80 percent accuracy.*